CLAIMS

1. A method for producing electric power at a certain AC voltage from a battery of elementary current sources electrically in series such as storage batteries, batteries of primary fuel cells and photovoltaic panels, characterized in that comprises:

providing a plurality of DC current sources in the form of elementary cells electrically in series and establishing a plurality of N intermediate voltage taps along the chain of elementary DC current sources such that the number of elementary cells comprised between a certain intermediate tap and another intermediate tap adjacent to it or a terminal of the electrical series is proportionate to the amplitude in the respective phase interval of an N number of discretization phases of the AC voltage waveform to be produced in a quadrant;

providing an N number of power switches, each connecting a respective intermediate tap and a first terminal of the electrical series of elementary cells to a common circuit node of a first polarity;

coupling said common circuit node of first polarity and the other terminal of the electrical series of elementary cells of polarity opposed to said first polarity, to respective nodes of an output bridge stage constituted by at least four power switches controlled in pairs, the other two nodes of the bridge stage constituting the AC voltage power output;

switching sequentially and cyclically in a continuous manner one switch at the time of the N switches, each for a time interval corresponding to 1/(4N) times the period of the AC output voltage and switching the current paths through the bridge stage every half a period.

2. The method according to claim 1, characterized in that said elementary cells electrically in series belong to a single multicell battery of said system.

3. The method according to claim 1, characterized in that said elementary cells electrically in series belong to N multicell batteries each constituted by said number of elementary cells varying according to said correspondence.

4. The method according to claim 1, characterized in that the number of elementary cells that are included in the circuit by selecting a certain intermediate tap corresponds to a respective value of a sine function in the respective phase interval of the N discretization phases in which each quadrant is subdivided.

5. A static inverter for a battery of elementary current sources or cells electrically in series and a number N of intermediate voltage taps along the chain of elementary DC current sources, characterized in that

the number of elementary cells comprised between an intermediate tap and another intermediate tap adjacent to it or an end terminal of said chain is proportionate to the amplitude in the respective phase interval of a number N of discretization phases of the waveform of the AC voltage to be output in a quadrant; and comprising

a number N of power switches each connecting a respective intermediate tap and a first end terminal of a first polarity of said chain of elementary cells in series to a common circuit node of said first polarity;

an output bridge stage constituted by at least four power switches controlled in pairs for switching the current paths through the bridge stage, having a first pair of nodes coupled to said common circuit node of said first plurality and to the other end terminal of polarity opposite to said first polarity of said chain of elementary cells, respectively, and a second pair of nodes constituting an AC output;

a control circuit sequentially and cyclically turning on, in a continuous manner, one switch at the time of said N switches; each for a phase interval of 1/(4N) times the period of said AC output, and alternately turning on by pairs said four power switches of said output bridge stage at every half a period.

6. The inverter according to claim 5, characterized in that all said elementary cells electrically in series belong to a single multicell battery.

7. The inverter according to claim 5, characterized in that said elementary cells electrically in series belong to a plurality of multicell batteries, each constituted by said number of elementary cells varying according to said correspondence.

8. The inverter according to claim 5, characterized in that the number of elementary cells that are included in the circuit by selecting a certain intermediate voltage tap is proportionate to the value of a sine function in the respective phase interval of the N discretization phases in which each quadrant is subdivided.

9. The inverter according to claim 5, characterized in that said control circuit comprises at least N+4 driving buffers of respective wires of a first N-wire control bus of said N power switches and a second four-wires control bus of said four power switches output bridge stage.

10. The inverter according to claim 9, characterized in that said driving buffers are controlled via software.

11. The inverter according to claim 9, characterized in that said control circuit comprises a clock generator for discretizing the desired waveform, by timing the N phase switchings in each quadrant of the period of the established AC output frequency, at least an up-down counter, synchronizing the instant of switching the output current paths through the output bridge stage at the end of each half a period.

12. A system for powering electric loads at a certain AC voltage from a solar energy conversion system comprising one or more photovoltaic panels, at least a redox flow battery for storing energy comprising a plurality of elementary cells electrically in series and having a number N of intermediate voltage taps along said chain of DC current sources composed of said elementary cells in

series, and an inverter for outputting electric power at said AC voltage, characterized in that

the number of elementary cells comprised between an intermediate tap and another intermediate tap adjacent to it or an end terminal of said chain is proportionate to the amplitude in the respective phase interval of a number N of discretization phases of the waveform of the AC voltage to be output in a quadrant; and comprising

a number N of power switches each connecting a respective intermediate tap and a first end terminal of a first polarity of said chain of elementary cells in series to a common circuit node of said first polarity;

an output bridge stage constituted by at least four power switches controlled in pairs for switching the current paths through the bridge stage, having a first pair of nodes coupled to said common circuit node of said first plurality and to the other end terminal of polarity opposite to said first polarity of said chain of elementary cells, respectively, and a second pair of nodes constituting an AC output;

a control circuit sequentially and cyclically turning on, in a continuous manner, one switch at the time of said N switches; each for a phase interval of 1/(4N) times the period of said AC output, and alternately turning on by pairs said four power switches of said output bridge stage at every half a period.